REMARKS

Claims 56-94 and 96 are pending. By this Amendment, claim 95 is cancelled, and claims 56, 78, 79, 87 and 96 are amended.

Claims 56-96 stand rejected under 35 U.S.C. §112, first paragraph. This rejection is respectfully traversed.

The Office Action asserts that "[r]egarding claims 56 and 96, ...the examiner maintains that the claimed limitation of 'whereby said optical element images said secondary light source in an exit pupil of the illumination system' is not disclosed." First, Applicant notes that the quoted feature is not present in claim 96. Second, with respect to the above-quoted feature, which is present in claim 56, as described in connection with the second embodiment on page 18, line 24 - page 24, line 13 of the specification, and referring to the attached annotated copy of Figs. 14 and 15, light source images formed by the first reflecting elements E1 of the first reflecting element group 220a are formed on the second reflecting element group 220b, which corresponds to the "mirror lens device" of claim 56. The aggregate of the light source images formed on the second reflecting element group 220b is a secondary light source. Referring to page 23, lines 21-23 and Fig. 20, it is clear that the second reflecting element group 220b is positioned in an optically conjugate position with respect to an entrance pupil of the projection optical system. In particular, the second reflecting element group 220b is positioned at an exit pupil of the illumination optical system (which is optically conjugate with respect to an entrance pupil of the projection optical system). Thus, mirror 66 (which corresponds to the claimed "optical element" images (i.e., forms an image of) the secondary light source (which is formed at second reflecting element group 220b) in an exit pupil of the illumination system.

For reasons similar to those described above, the present application describes a system in which "the secondary light source is formed at an exit pupil of the illumination system" as recited in claim 96. Again, see, for example, page 23, lines 21-23.

The feature that "said raster element of said mirror or lens is shaped and arranged in such a way that an image of said raster element covers a major portion of said reticle plane" of claim 56 also is supported by the specification. With reference to Fig. 20, the light beam from the first reflecting element Ea1 forms an arc-shaped irradiation region on a mask M. Although not depicted in Fig. 20, the light beam from the first reflecting element Eb1 also forms an arc-shaped irradiation region in the same region of the mask where first reflecting element Ea1 forms an arc-shaped irradiation region. This is supported, for example, at page 23, lines 14-16, which describes that "the light from the plurality of light source images I... arcuately illuminate mask M in a superimposed manner." Thus, since the light from each of the raster elements are superimposed with each other, the light from each of the raster elements covers a major portion of the reticle plane.

The feature that "said pupil is defined by an aperture and a filling ratio" recited in claim 56 is supported in the original specification. For example, as described on page 23, lines 29-30, in the illumination device of the second embodiment, Koehler illumination conditions are satisfied (i.e., the condenser optical system 64 forms an image of the secondary light source so that an image position of the secondary light source is infinitely far with respect to the mask surface). In the case of Koehler illumination, the aperture of the light beam with respect to the mask is determined by the size of the entire secondary light source. The ratio of the light source image occupied by the entire secondary light source is the filling ratio. Thus, the pupil is defined by an aperture and a filling ratio.

The feature "a second mirror or lens with a multiple number of pupil honeycombs" of claim 64 is supported by the second reflecting element group 220b, which has a plurality of

pupil honeycombs (each element of group 220b is a honeycomb, and the element is located at a pupil of the system as described above).

The feature "wherein said pupil honeycombs are arranged on said second mirror or lens in such a way that their images...illuminate said exit pupil with a predetermined pattern" of claim 66 is supported for the reasons set forth above with respect to claim 56. That is, the images of the elements of second reflecting element group 220b illuminate the exit pupil in a superimposed manner so as to form, for example, an arcuate shape, which is a "predetermined pattern".

The feature "wherein said raster element of said mirror is tilted relative to an enveloping or bearing surface" of claim 75 is supported, for example, at page 44, lines 1-15. In particular, this section of the specification describes that the second reflecting element group is arranged on a spherical surface, which corresponds to the claimed "enveloping or bearing surface."

The feature "wherein said mirror device has an outer axial course of a light bundle that is free of vignetting" of claim 77 is supported, for example, in Fig. 9, which shows that light bundles 110a, 110c are not shielded by mirrors 60, 66. That is, the light bundles 110a, 110c are not vignetted.

The questioned feature of claim 78 has been deleted from claim 78, thus rendering the rejection of claim 78 moot. Similarly, claim 95 has been cancelled, rendering the rejection of claim 95 moot.

With respect to claim 79, "imaging a secondary light source in an entrance pupil of a subsequent projection objective" is described, for example, at page 23, lines 21-23 and in Fig. 20, which makes it clear that the second reflecting element group 220b is positioned at an optically conjugate position with respect to an entrance pupil of the projection optical system, and that a light source image (i.e., the secondary light source image) is formed at this

position. The claim 79 feature of "adjusting an intensity distribution over said field" is described, for example, at page 42, lines 9-15.

The feature of an "accessible diaphragm plane" of claim 80 is described, for example, at page 33, lines 21-28, which discloses a plurality of exchangeable diaphragms. An "accessible diaphragm plane" means that the diaphragm plane can be accessed so that one diaphragm can be exchanged for another.

The claim 87 feature of "selecting an angle of deflection of a prismatic component of said raster elements of said first or second lens" has been deleted from claim 87, thus rendering this portion of the rejection moot. With respect to the other features questioned in claim 87, see the above discussion regarding claim 56.

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Allowance of this application and declaration of an Interference, as previously requested, are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,

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MAC/ccs

Attachments:
Annotated Copy of Figs. 14 and 15
Petition for Extension of Time

Date: January 26, 2005

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